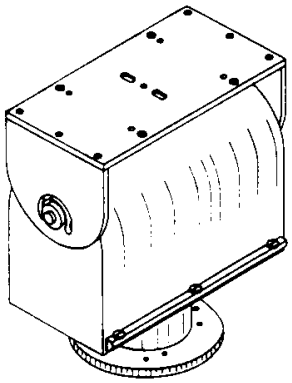

PT1250 Series Pan/Tilts

Installation/ Operation Manual

C370M-H (6/04)

Pelco • 3500 Pelco Way, Clovis • CA 93612-5699 USA • www.pelco.com
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CONTENTS

Section	Page
IMPORTANT SAFEGUARDS AND WARNINGS	3
DESCRIPTION	4
MODELS	4
OPTIONS	4
INSTALLATION	5
MOUNTING	5
ENCLOSURE INSTALLATION	5
ELECTRICAL INSTALLATION	6
MATING CONNECTOR ASSEMBLY	7
LIMIT STOP ADJUSTMENTS	10
OPERATION	11
TROUBLESHOOTING	11
SERVICE MANUAL	11
MAINTENANCE	12
TIGHTENING DRIVE CHAINS	12
CHAIN DRIVE LUBRICATION	12
MOTOR BRAKE REPLACEMENT	13
SPECIFICATIONS	14
WARRANTY AND RETURN INFORMATION	16

LIST OF ILLUSTRATIONS

Figure		Page
1	Sealant Locations	5
2	Connector Assembly	7
3	PT1250 Series Wiring for P, FG, FGP, HB and 220 Models	8
4	PT1250 Series Wiring for RAD Model	9
5	PT1250 Series Wiring for PP and WT Models	9
6	Limit Stops	10
7	Servicing the Pan/Tilt	12
8	Dimension Drawing	15

LIST OF TABLES

Table		Page
A	Requirements to Wire Power to Pan and Tilt Motors	6

IMPORTANT SAFEGUARDS AND WARNINGS

Prior to installation and use of this product, the following WARNINGS should be observed.

1. Installation and servicing should only be done by qualified service personnel and conform to all local codes.

2. Unless the unit is specifically marked as a NEMA Type 3, 3R, 3S, 4, 4X, 6, or 6P enclosure, it is designed for indoor use only and it must not be installed where exposed to rain and moisture.

3. The weight of the camera, lens, and enclosure shall not exceed 100 lb (45.4 kg).

4. Only use replacement parts recommended by Pelco.

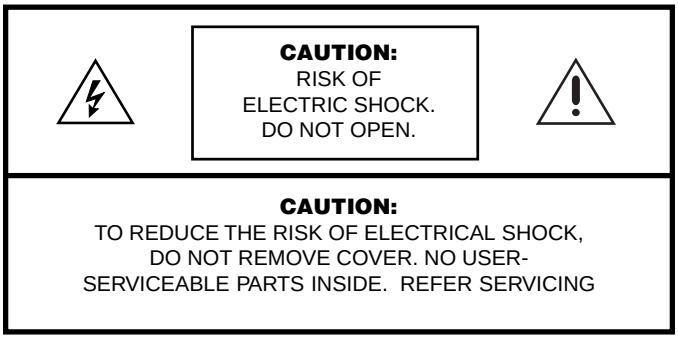
5. After replacement/repair of this unit's electrical components, conduct a resistance measurement between line and exposed parts to verify the exposed parts have not been connected to line circuitry.

6. The installation method and materials should be capable of supporting four times the weight of the enclosure, pan/tilt, camera and lens combination.

The product and/or manual may bear the following marks:

This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit.

This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.



Please thoroughly familiarize yourself with the information in this manual prior to installation and operation.

DESCRIPTION

The pan/tilt units of the PT1250 Series are designed for heavy-duty, indoor/outdoor use. They are capable of holding up to 100 pounds (45.4 kg), and they feature rugged high-torque AC motors with adjustable worm-gear final drives to insure long operational life and drift-free operation.

The pan/tilts are capable of auto/random scan operation when they are used with a Pelco solid-state auto/random scan joystick control. No additional wiring, switches, or relays are required.

All models are manufactured from cast and plate aluminum with all internal parts corrosion-protected steel or aluminum. Limit stops are externally adjustable for ease of installation.

MODELS

PT1250P	Heavy-duty, indoor/outdoor pan/tilt, 120 VAC
PT1250P/220	Same as PT1250P except 230 VAC input
PT1250P/FG	Same as PT1250P except supplied with high-speed gears (12°/6° per sec pan/tilt speed). Reduces load to 50 lb (22.68 kg)
PT1250P/FGP	Same as PT1250P except supplied with special pan-speed gearing (12°/sec pan speed)
PT1250P/HB	Same as PT1250P except supplied with spot heaters in base, blanket heater in cover. Heaters are 120 VAC, 50/60 Hz, 230 watts total, and allow operation to -50°F (-46°C)
PT1250P/HB/FG	Combination of PT1250P/HB and PT1250P/FG
PT1250P/PP	Same as PT1250P except supplied with preset positioning option. Requires preset control or control with AZL option (position-indication meter)
PT1250P/PP/WT	Same as PT1250P/PP except white epoxy polyester powder coat finish
PT1250P/RAD	Same as PT1250P except supplied with radiation-resistant wiring and white epoxy paint. Low-level radiation resistancy

OPTIONS

FGT/1250	Special tilt speed gearing: 6°/sec tilt speed. Reduces load to 50 lb (22.68 kg)

INSTALLATION

MOUNTING

NOTE: *To ensure proper wiring and operation of your equipment, it is recommended that you test the pan/tilt unit and associated equipment in your facility before installing it in the field.*

CAUTION: *Pan/tilts of the PT1250 Series are designed to operate in an upright or inverted position only. Do not mount the pan/tilt horizontally.*

1. Attach the pan/tilt unit to a flat surface. If you use a wall, ceiling, or pedestal mount, follow the instructions that are provided with the mount. Make sure the mounting surface can support four times the combined weight of the pan/tilt unit and the camera enclosure (including the camera and lens). The pan/tilt unit weighs 54 pounds (24.49 kg). Refer to the manuals for your enclosure, camera, and lens for the weights of those units. The weight of the enclosure, camera, and lens must not exceed 100 pounds (45.4 kg).

2. If you mounted the pan/tilt outdoors in the inverted position (base up), apply RTV silicone to the areas circled in Figure 1.

Proceed to ENCLOSURE INSTALLATION.

ENCLOSURE INSTALLATION

Attach the camera enclosure to the pan/tilt unit with a minimum of two 1/4-20 x 5/8-inch fasteners.

Proceed to ELECTRICAL INSTALLATION.

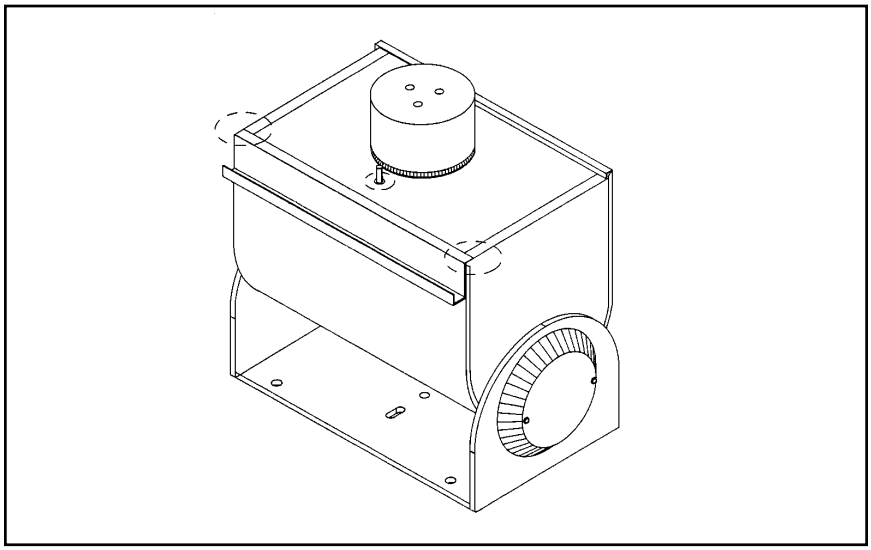


Figure 1. Sealant Locations

ELECTRICAL INSTALLATION

This section provides instructions for wiring the pan/tilt unit only. To wire the camera enclosure, refer to the manual for the enclosure.

Make the interconnecting cable to link the connector in the base of the pan/tilt unit to the control equipment.

The following are some common recommended installation practices:

- Use unshielded, jacketed, stranded, multiconductor cable with additional conductors than needed for future servicing and/or additions. Use color-coded conductors for ease of wiring and to identify functions at a later date.
- Keep a wiring diagram with the system for later reference.

Refer to Table A to determine the size of wire to use to wire power to the pan and tilt motors.

Proceed to LIMIT STOPS.

Table A. Requirements to Wire Power to Pan and Tilt Motors

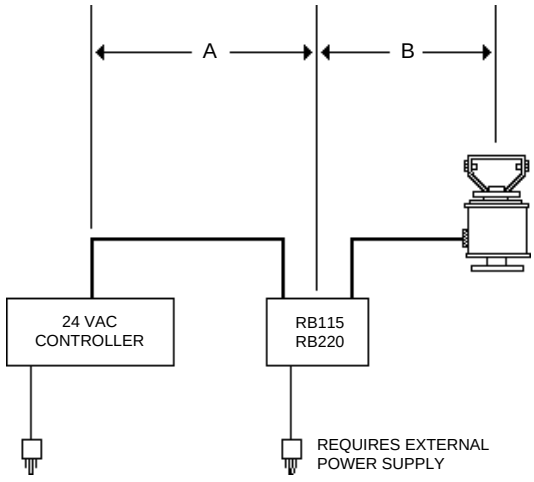
Model	Wire Size (AWG)	Maximum Distance "A" (5 Conductors*)	Maximum Distance "B" (5 Conductors*)	Maximum Distance "B" (6 Conductors**)
All models except 220	20	5,800 ft (1,768 m)***	489 ft (149 m)	978 ft (298 m)
	18	8,250 ft (2,515 m)	778 ft (237 m)	1,556 ft (474 m)
	16	13,000 ft (3,962 m)	1,235 ft (376 m)	2,470 ft (752 m)
220 model	20	5,800 ft (1,768 m)***	2,463 ft (750 m)	
	18	8,250 ft (2,515 m)	3,918 ft (1,194 m)	
	16	13,000 ft (3,962 m)	6,218 ft (1,895 m)	

IMPORTANT NOTE: If Relay Box is not used, maximum cable length is distance "B."

* Conductors are for up, down, left, and right functions, plus motor common. Cable distances are calculated with both motors (pan and tilt) running and assuming a 10% voltage drop in the cable.

** Same as five conductors except two wires are used for motor common.

*** Not recommended for reliable service between control and relay box.



NOTE: *Contacts cannot be removed from the connector without the use of the appropriate AMP extraction tool (ZT305183), which is available from Pelco.*

NOTE: *When a pan/tilt is mounted in the inverted position, the LEFT/RIGHT and UP/DOWN functions are reversed during operation. To correct this problem, reverse the LEFT/RIGHT functions in the control cable (pins 3 and 7) at the pan/tilt or control and the UP/DOWN functions (pins 5 and 6) at the pan/tilt or control.*

MATING CONNECTOR ASSEMBLY

To assemble the mating connector for the RAD model, refer to Figure 4. To assemble the mating connector for all other models, refer to Figure 2 and perform the following steps.

The instructions that follow apply to all AMP style connectors regardless of pin size or pin number.

1. Slide the connector clamp assembly over the conductor cable. If the diameter of the conductor cable is such that the rubber boot will slide over it easily, slide the rubber boot onto the conductor cable at this time. If not, discard the rubber boot.

2. Refer to Detail A in Figure 2. Prepare the wires from the conductor cable as follows:

   a. Strip at least 1-inch (2.54 cm) from the cable jacket to expose the wires. You may need to strip more from the cable jacket if you have more wires.

   b. Strip 1/8-inch (0.125 cm) from each wire.

   c. Using an AMP style crimper, crimp the wires and their insulation to the connector pins.

3. Slide the connector pins into the appropriate holes in the connector body until they snap into place. Refer to detail B in Figure 2 and to Figure 3 or 5 for correct pin arrangement, depending on model and options.

4. Push the connector clamp assembly (with boot, if used) toward the connector body. Screw the clamp assembly onto the connector body, being careful not to disturb the wires.

5. To complete the assembly, attach the appropriate clamp with the screws provided and tighten.

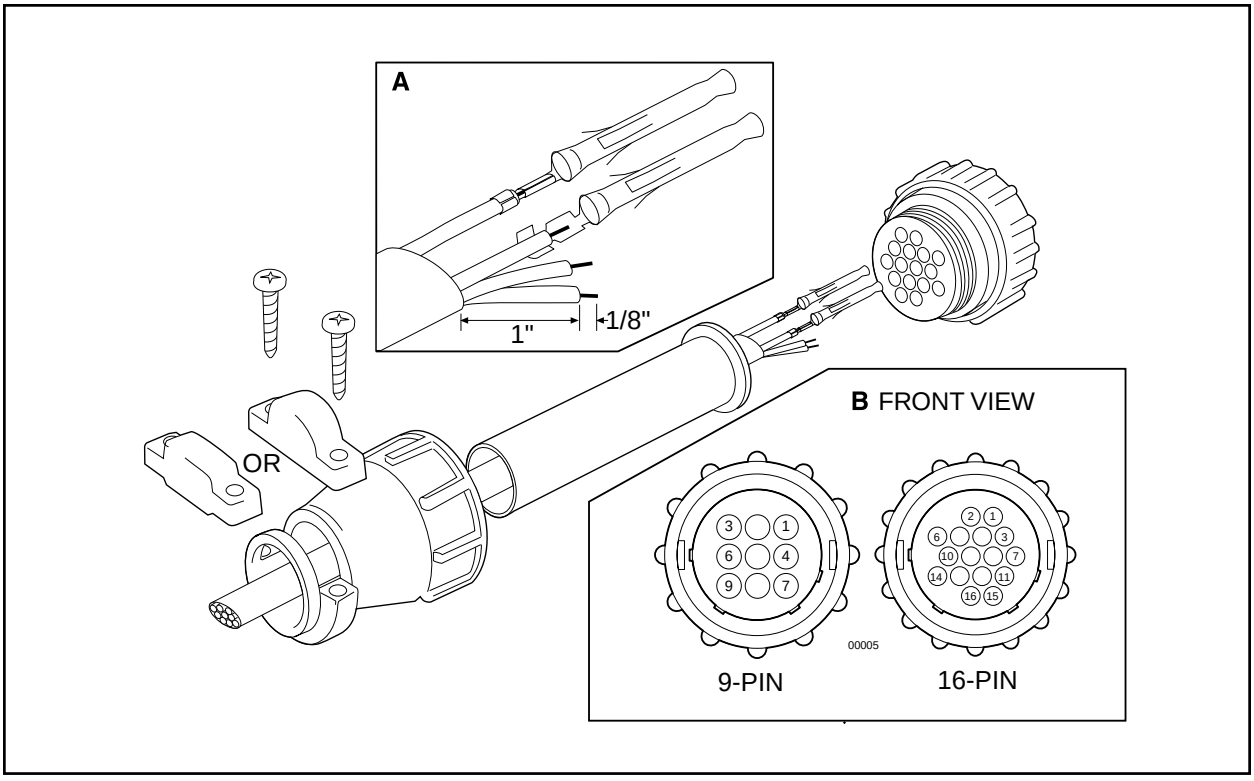


Figure 2. Connector Assembly

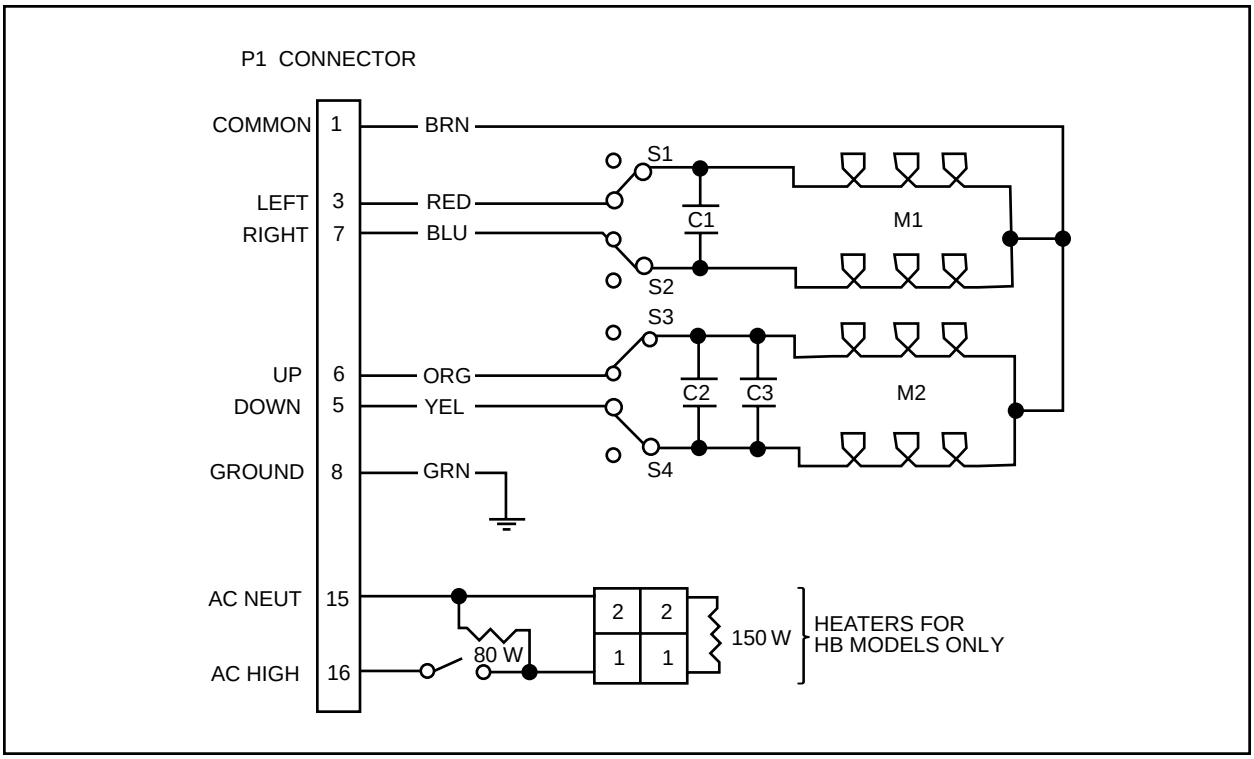


Figure 3. PT1250 Series Wiring for P, FG, FGP, HB and 220 Models

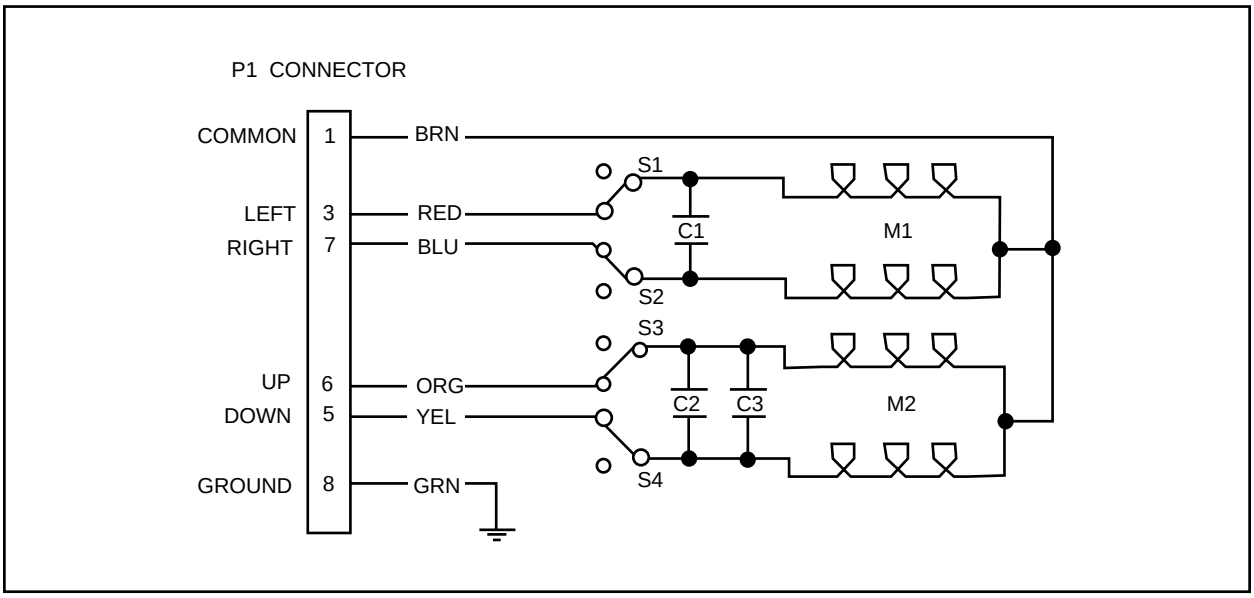


Figure 4. PT1250 Series Wiring for RAD Model

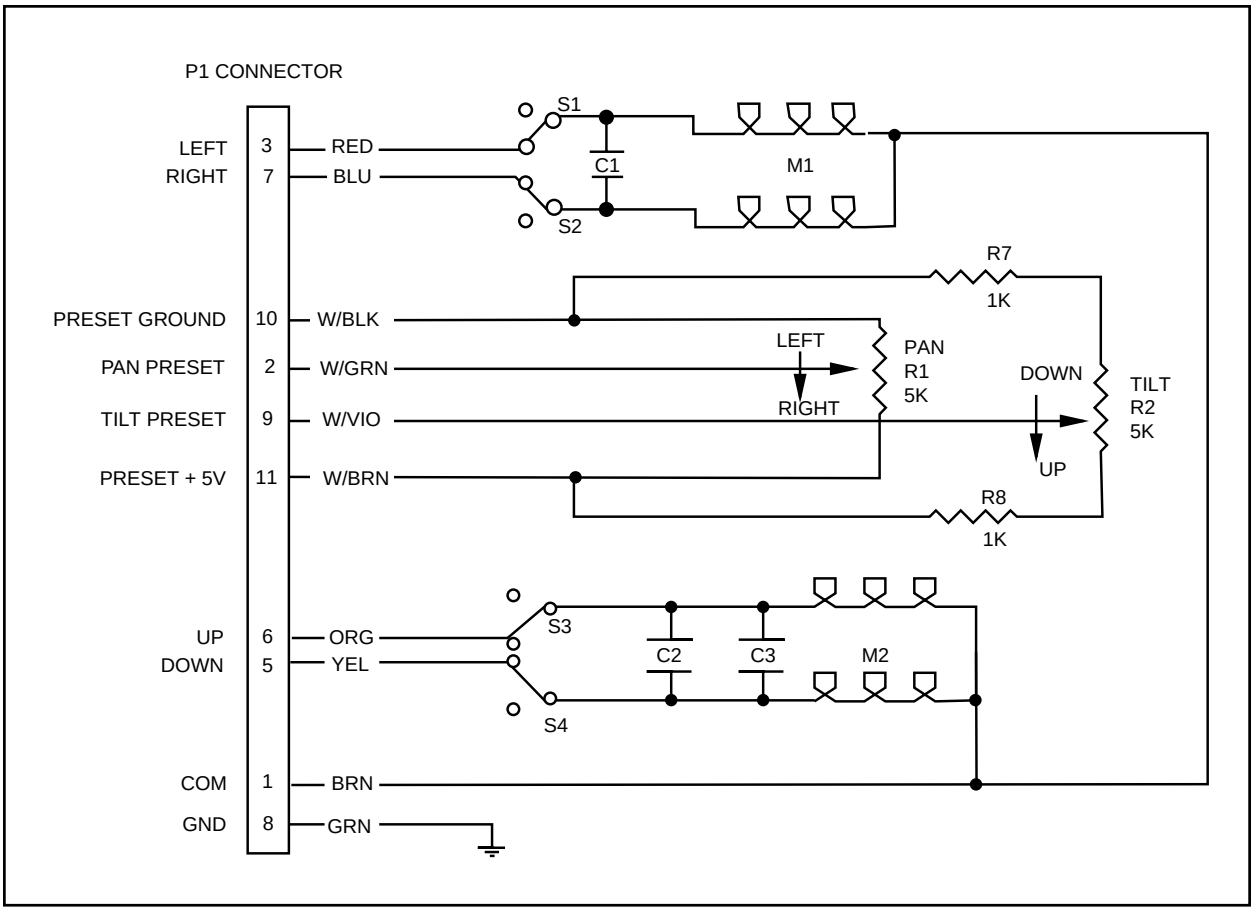


Figure 5. PT1250 Series Wiring for PP and WT Models

LIMIT STOP ADJUSTMENTS

WARNING: Do not operate the pan/tilt without limit stops. *Do not attempt to adjust the limit stops while the unit is operating. Personal injury or damage to the unit may result.*

Do not *remove or reposition the fixed limit stop on the pan/tilt.* ***DAMAGE WILL OCCUR.***

To set pan/tilt limit stops, perform the following steps. Refer to Figure 6.

1. Loosen the pan limit stops.
2. Turn the control unit on. Pan the unit to the right until the desired right pan limit is reached.
3. Move the right pan limit stop until it touches the pan limit switch actuator. Move the stop a slight distance further against the actuator until it clicks to indicate the opening of the limit switch. Lock the stop in place.
4. Pan the unit to the desired left position. Adjust the left pan limit stop as described in step 3.
5. Pan left and right to both limit stops and check for exact positioning. Tighten both stops securely.
6. Loosen the tilt limit stop screws and tilt the table, using the joystick, to the desired up position.
7. Move the up limit stop until it touches the tilt limit switch actuator and clicks. Lock the stop in place.
8. Tilt the table to the desired down position and set the stop in the same manner.
9. Tilt the table up and down and check for exact positioning. Tighten both stops securely.

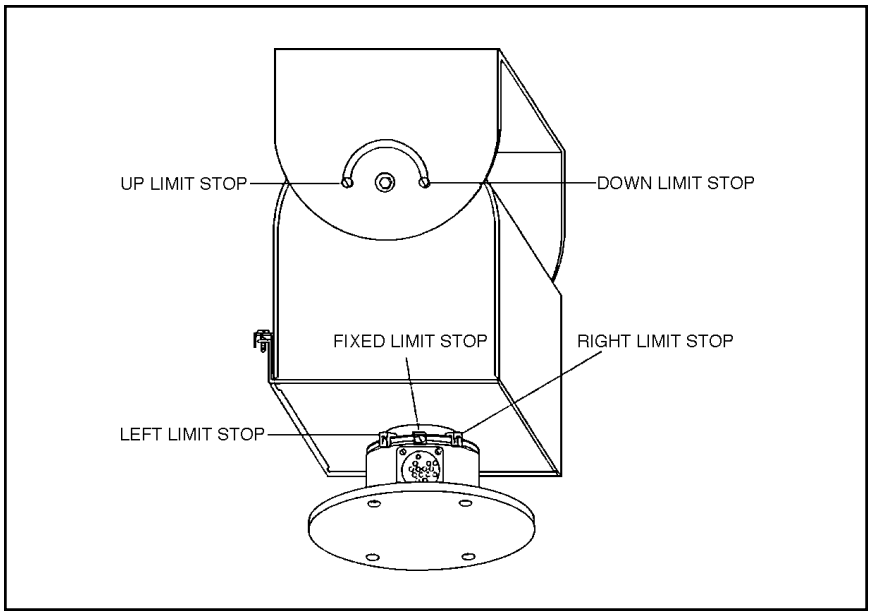


Figure 6. Limit Stops

OPERATION

Refer to the manual for your control equipment for operating the pan/tilt.

TROUBLESHOOTING

Some common problems encountered with pan/tilt systems include miswiring, overloading, and not using the units for the correct application. If the pan/tilt unit fails to operate, do the following:

1. Check the fuse in the control unit. If the fuse is bad, replace it.
2. If the fuse blows after replacing it, check the control cable between the control unit and the pan/tilt for shorts, high resistance, or opens.
3. If the control cable is good, reconnect it to the control unit but not to the pan/tilt. Replace the fuse and operate the control unit. If the fuse blows again, the fault is in the control.

Refer to Figure 3-5 for the following steps.

4. If the control unit is good, check the wiring harness in the pan/tilt for shorts.
5. If the wiring harness is good, check the motor starting capacitors.
6. If the starting capacitors are good, check the motors for opens and shorts. There should be low resistance between the windings.
7. Check the limit switches for opens and shorts.

SERVICE MANUAL

If you need to service your unit, obtain a service manual in one of the following ways:

- Go to Pelco's web site at http://www.pelco.com and find service manual C373SM.
- Contact Pelco's Literature Department and request service manual C373SM.

MAINTENANCE

Inspect the pan/tilt unit every six months to ensure trouble-free operation and an extended product life. Harsh environments and/or continuous motion applications may require more frequent maintenance.

Please read all of the instructions that follow before servicing the pan/tilt.

To begin, remove the three screws on the front of the pan/tilt housing and lift the cover to gain access to the pan and tilt motor assemblies.

TIGHTENING DRIVE CHAINS

Check the pan and tilt drive chains for tension. A movement of 1/32 of an inch to 3/32 of an inch in the chains is acceptable. If the movement of a chain exceeds 3/32 of an inch, adjust the chain as follows:

1. Loosen the screws securing the motor to the mounting frame.
2. Pry on the motor to apply tension to the chain. Do not over-tension the drive chain.
3. Keep tension on the chain while tightening the screws.

CHAIN DRIVE LUBRICATION

Sprockets, chains, and gears should be well greased. If necessary, lubricate the pan and tilt gears, sprockets, and chains as follows with a high-quality grease capable of withstanding temperatures from -50° to 170°F (-46° to 77°C). Do the following:

1. Liberally apply grease to the pan and tilt gears, chains, and sprockets (refer to Figure 7).
2. Operate the pan and tilt motors to spread the grease across the parts.
3. Apply additional grease if necessary.
4. Reinstall the cover. If the pan/tilt is installed outdoors in an inverted position, apply RTV silicone sealant as shown in Figure 1.

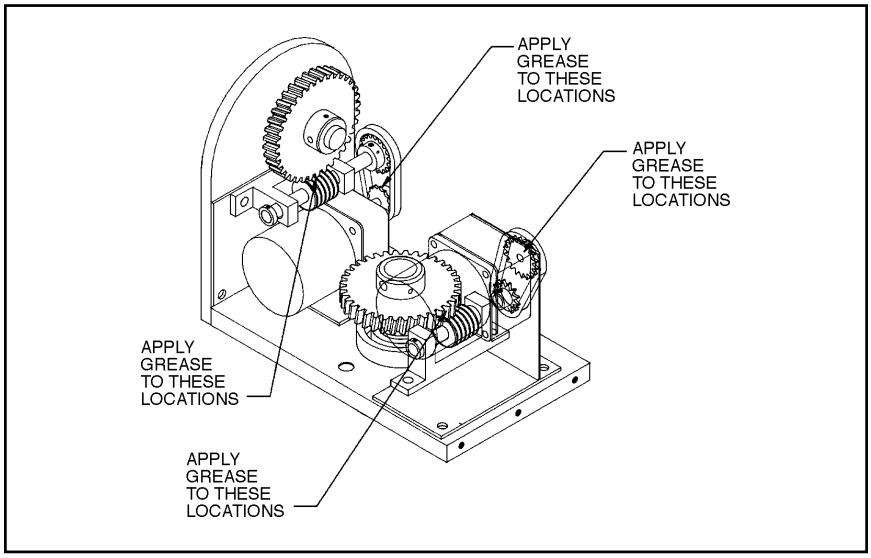


Figure 7. Servicing the Pan/Tilt

MOTOR BRAKE REPLACEMENT

WARNING: *The knife-blade included in the brake kit is very sharp. It should be handled carefully and disposed of properly after use.*

To order replacement motor brakes, specify part number 1250BRAKE. The kit consists of four springs, four Teflon pads, two screws, and a small knife-blade for removing the old brake pads.

1. Remove the large rectangular heat sink from the back of the pan motor. Remove the four springs. Do not disturb the silicone heat sink compound. It ensures the transfer of heat to the heat sink and MUST be present when the heat sink is replaced.

2. Use the knife blade to remove the worn pads, as follows:

   a. Insert the knife blade into the opening and press firmly into the brake pad.

   b. Before trying to remove the brake pad, twist the knife-blade. This will loosen the worn pad and make removal easier.

   c. Gently twist the blade as you pull the worn pad out.

3. Insert the four new brake pads and four springs. Replace the heat sink using the new screws.

Reinstall the cover. If your pan/tilt is installed in an inverted position, apply RTV silicone sealant to the areas circled in Figure 1.

SPECIFICATIONS

GENERAL

Construction:	Aluminum casting and plate; all internal parts corrosion protected
Dimensions:	See Figure 8
Environment:	Indoor/outdoor
Temperature:	-10° to 120°F (-23° to 49°C)

Weight	Unit	Shipping
	54 lb (24.95 kg)	59 lb (26.72 kg)

MECHANICAL

Pan	
Horizontal Movement:	0-355°
Speed:	6°/sec ±1° (no load condition) for all models except FG and FGP, which are 12°/sec
Torque:	50 ft lb with specified voltage
Tilt	
Vertical Movement:	±90°
Speed:	3°/sec ±.5° (no load condition) for all models except FG, which is 6°/sec
Maximum Load:	100 lb (45.4 kg) at 5 inches (12.7 cm) from tilt table surface to center of gravity
Gearing:	Adjustable worm-gear final drive
Bearings:	Heavy-duty ball bearings (pan) Oilite bronze bushing (tilt)
Braking:	Mechanical
Duty Cycle:	50% duty cycle; 30-minute rating

ELECTRICAL

Input Voltage:	120 VAC, 50/60 Hz or 230 VAC, 50 Hz
Power Requirements	

Running:	120 VAC	230 VAC
Pan	.48 amps (57.5 vA)	.19 amps (43.7 vA)
Tilt	.48 amps (57.5 vA)	.27 amps (62.1 vA)

Starting:	120 VAC	230 VAC
Pan	.60 amps (72.5 vA)	.19 amps (43.7 vA)
Tilt	.60 amps (72.5 vA)	.27 amps (62.1 vA)

Connectors:	Amp CPC type, mate supplied
Motors:	Two-phase induction type, continuous duty, instantaneous reversing
Limit Switches:	Pan and tilt - 5 amp, 10 million cycle rating (external adjustment)

(Design and product specifications subject to change without notice.)

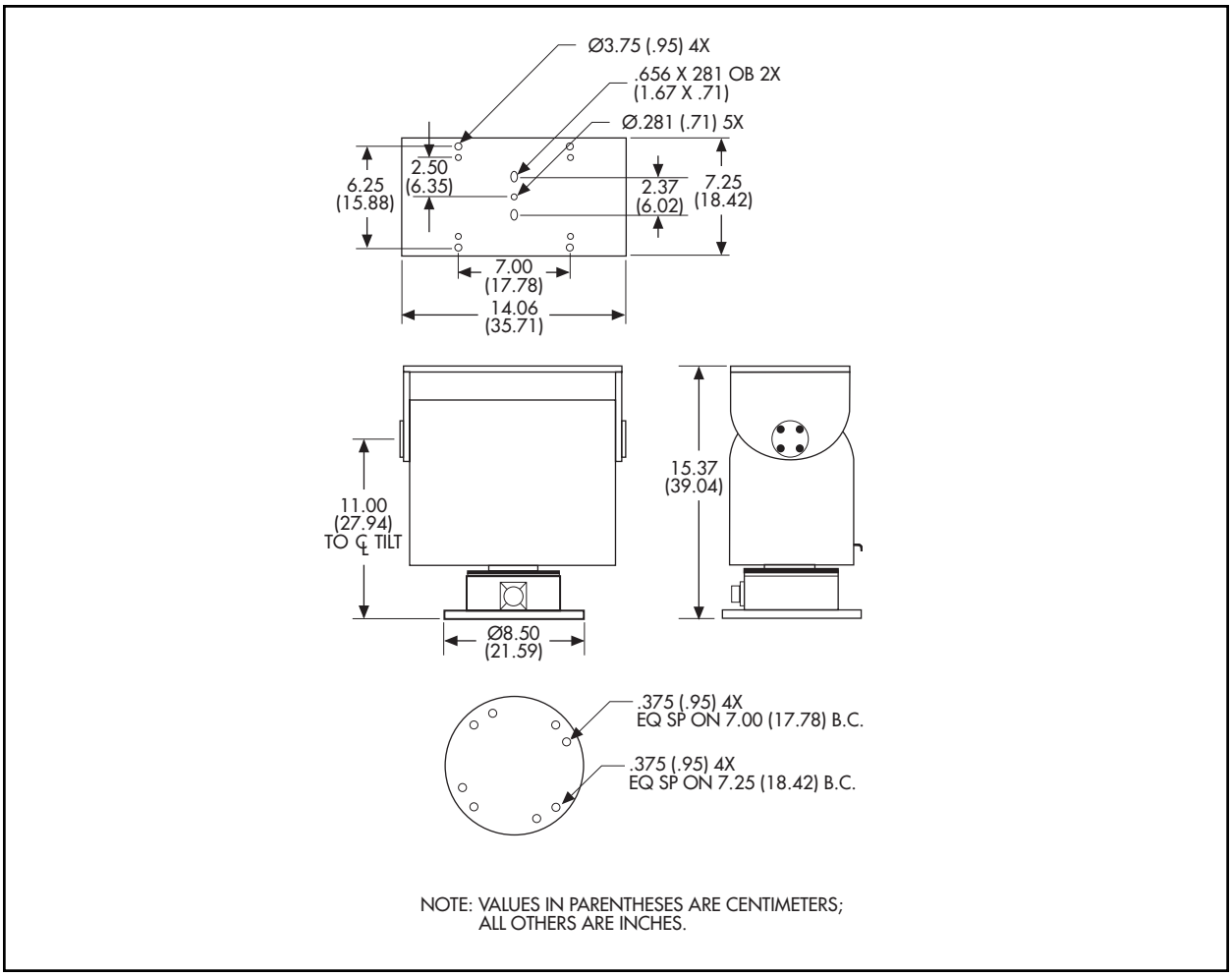


Figure 8. Dimension Drawing

WARRANTY AND RETURN INFORMATION

WARRANTY

Pelco will repair or replace, without charge, any merchandise proved defective in material or workmanship for a period of one year after the date of shipment.

Exceptions to this warranty are as noted below:

- Five years on FT/FR8000 Series fiber optic products.
- Three years on Genex® Series products (multiplexers, server, and keyboard).
- Three years on Camclosure® and fixed camera models, except the CC3701H-2, CC3701H-2X, CC3751H-2, CC3651H-2X, MC3651H-2, and MC3651H-2X camera models, which have a five-year warranty.
- Two years on standard motorized or fixed focal length lenses.
- Two years on Legacy®, CM6700/CM6800/CM9700 Series matrix, and DF5/DF8 Series fixed dome products.
- Two years on Spectra®, Esprit®, ExSite™, and PS20 scanners, including when used in continuous motion applications.
- Two years on Esprit® and WW5700 Series window wiper (excluding wiper blades).
- Eighteen months on DX Series digital video recorders, NVR300 Series network video recorders, and Endura™ Series distributed network-based video products.months on DX Series digital video recorders, NVR300 Series network video recorders, Endura™ Series distributed network-based video products, and TW3000 Series twisted pair transmission products.
- One year (except video heads) on video cassette recorders (VCRs). Video heads will be covered for a period of six months.
- Six months on all pan and tilts, scanners or preset lenses used in continuous motion applications (that is, preset scan, tour and auto scan modes).

Pelco will warrant all replacement parts and repairs for 90 days from the date of Pelco shipment. All goods requiring warranty repair shall be sent freight prepaid to Pelco, Clovis, California. Repairs made necessary by reason of misuse, alteration, normal wear, or accident are not covered under this warranty.

Pelco assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the Products. Pelco's liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the Products shall not exceed the price paid by the Dealer to Pelco for such Products. In no event will Pelco be liable for any special, incidental or consequential damages (including loss of use, loss of profit and claims of third parties) however caused, whether by the negligence of Pelco or otherwise.

The above warranty provides the Dealer with specific legal rights. The Dealer may also have additional rights, which are subject to variation from state to state.

If a warranty repair is required, the Dealer must contact Pelco at (800) 289-9100 or (559) 292-1981 to obtain a Repair Authorization number (RA), and provide the following information:

1. Model and serial number
2. Date of shipment, P.O. number, Sales Order number, or Pelco invoice number
3. Details of the defect or problem

If there is a dispute regarding the warranty of a product which does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

Method of return shipment shall be the same or equal to the method by which the item was received by Pelco.

RETURNS

In order to expedite parts returned to the factory for repair or credit, please call the factory at (800) 289-9100 or (559) 292-1981 to obtain an authorization number (CA number if returned for credit, and RA number if returned for repair).

All merchandise returned for credit may be subject to a 20% restocking and refurbishing charge.

Goods returned for repair or credit should be clearly identified with the assigned CA or RA number and freight should be prepaid. Ship to the appropriate address below.

If you are located within the continental U.S., Alaska, Hawaii or Puerto Rico, send goods to:

Service Department
Pelco
3500 Pelco Way
Clovis, CA 93612-5699

If you are located outside the continental U.S., Alaska, Hawaii or Puerto Rico and are instructed to return goods to the USA, you may do one of the following:

If the goods are to be sent by a COURIER SERVICE, send the goods to:

Pelco
3500 Pelco Way
Clovis, CA 93612-5699 USA

If the goods are to be sent by a FREIGHT FORWARDER, send the goods to:

Pelco c/o Expeditors
473 Eccles Avenue
South San Francisco, CA 94080 USA
Phone: 650-737-1700
Fax: 650-737-0933

REVISION HISTORY

Manual #	Date	Comments
C370M	11/88	Original version.
C370M-A	2/90	Revised Figures 1, 7, and 9. Added Figure 10. Revised Section 6.2, "Service Tips." Removed exploded assembly diagram and parts lists. Removed PT1253 Series models.
C370M-B	8/90	Added new exploded assembly diagram and parts lists.
C370M-C	12/90	Expanded warnings. Added drawing to show sealant locations for inverted unit. Expanded Section 4.3.1, "Cable Requirements."
C370M-D	1/91	Deleted SEC model.
C370M-E	11/91	Incorporated Rev. D addendum adding schematic for PT1250P/RAD model.
C370M-F	11/92	Added maintenance section.
C370M-G	10/96	Updated manual to new format. Revised text. Added model PT1250P/PP/WT. Replaced Section 8.0 with new drawings and parts lists. Revised temperature and weight specifications.
C370M-H	11/98	Changed manual to new format. Added certifications. Revised installation instructions. Moved exploded assembly diagrams and parts list to maintenance/service manual. In wiring schematics, changed color of ground wire to green. Expanded section on motor brake replacement.
	7/00	Running change. Changed to new format. Made other minor revisions.
	6/04	Removed agency logos from cover; updated Warranty and Return information.

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